WELCOME TO CS190

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CS 190 – Fall 2016

Who are you?

Name, School, Major(s)

Project? If so, project interests? Clinic?

Something interesting about yourself

What you want (plan) to do when you graduate

Anything else?

This course…

What is the goal?

What does it involve?

What is the goal

Introduce you to research in computer science

Reading technical material
- Critical reading

Presentation skills

Scientific writing (in the form of a survey paper)

For those doing a senior project:
- Do the background reading for your project
- Guide you through the process (i.e. remind of of deadlines ☺)

What does it involve

Three main components

- Colloquium

- Paper reading and presentations

- Survey paper

Colloquium

Roughly every other Thursday at 4:15pm
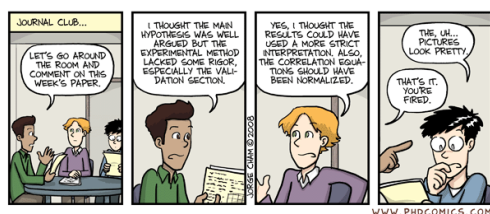http://www.pomona.edu/academics/departments/computer-science/colloquium/

Attendance *is required (both fall and spring semester)*

If you can't make one, arrange beforehand with myself to make it up by attending one up at Mudd

A good chance to find out more about what goes on in CS

Paper reading

http://www.phdcomics.com/comics/archive.php?comicid=963

Each week

There will be a paper to read, posted on the course webpage

30 minute presentation by 2-3 presenters

30 minute discussion around the paper

15 minutes RTOTD

If you're **not** presenting

1. Read the paper
   - This should happen at least a day in advance of the class (ideally a few days before)
   - plan on a couple of hours

2. Go to the sakai forum for the paper
   - Read the comments/questions
   - Post something thoughtful
   - Must happen by 5pm the day before the presentation

3. Show up to class
   - Pay attention (stay off your phone/laptop)
   - Ask questions and contribute to the discussion

If you are presenting

1. Read through the paper (start early!)
2. Read through the paper again
3. Discuss the paper with your presentation partner/group
4. *Optional*: Setup an appointment to talk to me
   - Don't wait until the last minute to do this!
5. Put together your presentation
6. Practice your presentation
7. By 5pm the day before: Post some discussion topics/ questions on sakai
8. After 5pm the day before: Review the sakai discussion board and adjust presentation accordingly
9. After the presentation, meet with me to get feedback

Homework #1

You will be presenting **two** papers throughout the semester

Look through the papers and decide which look interesting
   - Read the abstracts and introductions
   - Glance through the rest of the paper

I will send out an e-mail after class with a link for you to upload your preferences (due Saturday, 11:59pm)

Reading academic papers: my two cents

Reading academic papers

Resources

- Survey paper
  - Latex style guide for the survey paper
  - Example survey paper starter files
- Research talks
  - *How to Present a Paper* by Ashwin Ram, a short document that contains several good suggestions
  - *How to give a good research talk* by Simon Peyton Jones and others
- *How to Read a CS Research Paper?* by Philip Fong
- *A Guide to the Senior Exercise*
- Some LaTeX resources:
  - the LaTeX Website
  - the not so short introduction to LaTeX

Homework #2: Read the resources on the course webpage

Presentations

What makes a good presentation?

What makes a bad presentation?

Presenting academic papers: my two cents

Make sure you understand the paper (or at least most of it)

Think about what you want to talk about:

What was the paper about?

Why did the person write this paper?

What are the interesting aspects to this paper?

Organization

What problem is the paper trying to solve?

Why should we care about this problem?

Optional: What have other people done? How does this fit in the context of previous/current work?

Approach/algorithm description/analysis

Experimental setup

Results

Conclusion/future work

Dos and Don'ts

Don't:
- Put too much information on one slide
- Put too much text on one slide
- Only use text and bullet points (ignore this presentation ☺)
- Procrastinate on preparing the presentation!

Dos and Don'ts

Do
- Use figures, diagrams and other visual aids
- Plan on no more than 1 slide per minute
- Use large fonts
- Think about what things you've liked/disliked in other presentations
- Make sure you annotate your figures, equations, etc.
- Practice, revise and reiterate

Evaluating presentations

Well prepared

Organization

Content

Slide quality/use of visual aids

Discussion

Evaluating presentations

https://provost.wisc.edu/assessment/documents/OralCommunication.pdf

Survey paper basics

What is a survey paper?
- Gives an overview of a particular subfield (often fairly specific)
- Should cite and discuss the "important" papers in the field (and possibly related fields, depending on the size of the field)
- **Is NOT a laundry list of papers in a field and a summary of those papers!**
- Key: provide some additional insight or organization regarding the field

Survey paper steps

1. Identify the topic

If you are NOT doing a senior project, I strongly recommend it be related to natural language processing (still lots of options within this field)

If you ARE doing a senior project, it will be on the topic of your senior project

Survey paper steps

1a. Identify the topic
1b. Find at least 10 references (i.e. papers) that are in your topic/subfield

Why isn't this a completely separate step?

Part of figuring out your topic of interest will likely involve reading some papers. Often an iterative process!

Survey paper steps

2. Read the 10 papers

You'll likely find more papers as you start to read these

3. Create an annotated bibliography

For each paper:
- proper citation
- paragraph summary

all formatted in a pretty way ☺

Survey paper steps

4. Outline + introduction

How do you organize/make sense of the papers? This if often one of the key contributions of the survey paper!

5. Write a draft of the survey paper

6-10 pages with *at least* 10 references

6. Finalize the paper

Senior project

Optional! ☺

What is it? What does it involve?

Read "A Guide to the Senior Exercise"! (well, at least the introductory material)

Start thinking about ideas now!

Rett Bull: security, theory of computation, computer architecture, systems

Yi Chen: algorithms, complex networks

Michael Greenberg: programming languages, verified systems, networking, machine learning (topic modeling)

Dave Kauchak: AI, machine learning, natural language processing

Peter Mawhorter: AI, computational creativity, interactive narrative, games

Katya Mkrtchyan: Image processing, image analysis, bioimage analysis

Melanie Wu: databases

How to narrow it down to a field

Which classes have you enjoyed most?

Are there topics you wanted to investigate/learn more about?

Life after Pomona?

What sounds interesting?

Now what?

Track down a textbook for that topic and browse through it

Scan over recent papers in this field
- Some textbooks will have bibliographic information
- Use Google to find conferences
- Google scholar

Talk to CS faculty to get some direction: you **must** talk to a faculty member if you hope to be able to do a senior project

Talk to other students

Attend the project discussion meeting on 9/8

Remember…

9/14: submit a ranked list of advisor/topic
- List of three
- Must have at least 2 unique topics
- Must have at least 2 unique advisors
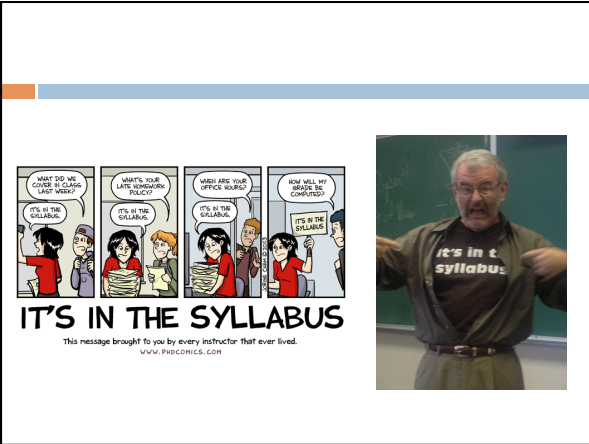
You will be *applying* to do the senior project

We are giving you almost 4 weeks to really focus your project ideas!

What will make it more likely that your project proposal is accepted?

Homework #3

Optional: Start figuring out your topic!

Course webpage and details

Homework?

#1 Submit your preferences by Saturday at 11:59pm

#2 Read course resources

3 Start investigating your senior project topic